CLAIMS

What is claimed is:

1. An apparatus for masking defects in a visual display, comprising:

a visual display unit having a plurality of display elements;

a translation unit coupled to the visual display unit that is structured to impart motion to the display unit; and

a control unit coupled to the translation unit and the display device that is structured to receive image signals from an image signal source and capable of exchanging signals with the translation unit and the display unit to controllably direct the movement of the display unit and to compensatingly shift the image signals, the shifted signals concealing display element defects on the display surface.

2. The apparatus according to claim 1, wherein the translation unit imparts motion to the visual display unit in at least a first direction and a second direction, the second direction being substantially perpendicular to the first direction.

3. The apparatus according to claim 2, wherein the translation unit imparts a motion primarily in the first direction.

4. The apparatus according to claim 2, wherein the translation unit imparts a motion primarily in the second direction.

5. The apparatus according to claim 1, wherein the translation unit is mechanically coupled to the visual display unit.

6. The apparatus according to claim 1, wherein the translation unit is electromagnetically coupled to the visual display unit.

7. The apparatus according to claim 1, wherein the image signal source is a display driver attached to a computer.

8. The apparatus according to claim 1, wherein the image signal source is a video signal source.

9. The apparatus according to claim 1, wherein the visual display unit is further comprised of a field emission display.

10. The apparatus according to claim 1, wherein the visual display unit is further comprised of an active matrix liquid crystal display.

11. The apparatus according to claim 1, wherein the visual display unit is further comprised of a cathode ray tube.

12. An apparatus for masking defects in a visual display, comprising:

a visual display unit having a plurality of display elements;

a translation unit coupled to the visual display unit that is structured to impart motion to the display unit;

a display signal source capable of providing input signals to the display elements on the surface of the visual display; and

a control unit coupled to the translation unit and the display signal source that is structured to exchange signals with the translation unit and the display signal source to controllably direct the movement of the display unit and to compensatingly shift the input signals in the signal source, the shifted signals concealing display element defects on the display surface when displayed.

13. The apparatus according to claim 12, wherein the translation unit imparts motion to the visual display unit in at least a first direction and a second direction, the second direction being substantially perpendicular to the first direction.

14. The apparatus according to claim 13, wherein the translation unit imparts a motion substantially in the first direction.

15. The apparatus according to claim 13, wherein the translation unit imparts a motion substantially in the second direction.

16. The apparatus according to claim 12, wherein the translation unit is mechanically coupled to the visual display unit.

17. The apparatus according to claim 12, wherein the translation unit is electromagnetically coupled to the visual display unit.

18. The apparatus according to claim 12, wherein the display signal source is a display driver attached to a computer.

19. The apparatus according to claim 12, wherein the display signal source is a video signal source.

20. The apparatus according to claim 12, wherein the visual display unit is further comprised of a field emission display.

21. The apparatus according to claim 12, wherein the visual display unit is further comprised of an active matrix liquid crystal display.

22. The apparatus according to claim 12, wherein the visual display unit is further comprised of a cathode ray tube.

23. An apparatus for masking visual display surface defects, comprising:

a display device having a viewing surface and a plurality of contiguous display elements disposed thereon, wherein at least one of the display elements is defective;

a signal source unit capable of directing a plurality of image signals to the plurality of display elements on the viewing surface;

a translation device coupled to the display device; and

a control unit coupled to the signal source unit and the translation unit that is operable to command the translation unit to shift the display in a predetermined direction and to command the signal source unit to correspondingly shift the image signals provided to the display device by the signal source unit to compensate for the display device shift before displaying the shifted signals, and to command the display thereof to obtain a stable image that conceals the at least one defective display element.

24. The apparatus according to claim 23, wherein the display device is further comprised of a first sliding means that constrains movement of the display to movement in a first direction, and a second sliding means that constrains movement of the display to movement in a second direction.

25. The apparatus according to claim 24, wherein the display device is further comprised of a third sliding means that constrains movement of the display to movement in a third direction, the third direction being approximately perpendicular to the first and second directions.

26. The apparatus according to claim 25, wherein the sliding means are further comprised of linear bearings.

27. The apparatus according to claim 25, wherein the sliding means are further comprised of linear gas lubricated bearings.

28. The apparatus according to claim 23, wherein the translation device is further comprised of a first actuator to impart a first motion to the display device, and a second actuator to impart a second motion to the display device, the second motion being approximately perpendicular to the first motion.

29. The apparatus according to claim 28, wherein the translation device is further comprised of a third actuator to impart a third motion to the display device, the third motion being approximately perpendicular to the first and second motions.

30. The apparatus according to claim 28, wherein the actuators are further comprised of piezoelectric actuators.

31. The apparatus according to claim 28, wherein the actuators are further comprised of solenoid actuators.

32. The apparatus according to claim 28, wherein the actuators are further comprised of pneumatic actuators.

33. The apparatus according to claim 23, wherein the control unit is further comprised of a first position sensor to sense a first position of the display relative to a first direction, and a second position sensor to sense a second position of the display relative to a second direction, the second direction being approximately perpendicular to the first direction.

34. The apparatus according to claim 33, wherein the control unit is further comprised of a third position sensor to sense a third position of the display relative to a third direction, the third direction being approximately perpendicular to the first and second directions.

35. The apparatus according to claim 34, wherein the position sensors are further comprised of linear variable differential transformers.

36. The apparatus according to claim 34, wherein the position sensors are further comprised of variable capacitance displacement sensors.

37. The apparatus according to claim 23, wherein the display device is further comprised of a field emission display.

38. The apparatus according to claim 23, wherein the display device is further comprised of an active matrix liquid crystal display.

39. The apparatus according to claim 23, wherein the display device is further comprised of a cathode ray tube.

40. The apparatus according to claim 23, wherein the control unit is further comprised of a closed feedback control loop using a proportional-integral-differential algorithm.

41. A method for concealing a defective display element in a visual display surface, comprising:

directing an image signal onto a first display element positioned in a first display location, the first display element being at least partially defective;

translating a second display element into the first display location;

directing the image signal onto the second display element while the second display element is in the first location.

42. The method according to claim 41 further comprising the step of translating the first display element into the first display location.

43. The method according to claim 41 further comprising the step of translating the first display element into a second display location.

44. The method according to claim 41, wherein the step of translating a second display element into the first display location comprises moving a second display element into the first location by a series of rectilinear movements.

45. The method according to claim 41, wherein the step of translating a second display element into the first display location comprises moving a second display element into the first location by horizontally translating the second display element into the first location.

46. The method according to claim 41, wherein the step of translating a second display element into the first display location comprises moving a second display element into the first location by vertically translating the second display element into the first location.

47. The method according to claim 41, wherein the step of translating a second display element into the first display location comprises moving a second display element into the first location by horizontally translating a second display element adjacent to the first display element into the first location.

48. The method according to claim 41, wherein the step of translating a second display element into the first display location comprises moving a second display element into the first location by vertically translating a second display element adjacent to the first display element into the first location.

49. The method according to claim 41, wherein the steps of directing the image signals are further comprised of raster scanning the display elements on the display surface.

50. The method according to claim 41, wherein the steps of directing the image signals are further comprised of matrix addressing the display elements on the display surface.